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"MAGIC"



Garratt-Callahan Co.

San Francisco

Chicago



A BOOK WHICH
TELLS YOU ABOUT
“MAGIC”
BOILER
PRESERVATIVE

*The Pioneer Boiler
Treatment*

WHAT IT IS
WHAT IT DOES
HOW TO USE IT

Published by
GARRATT-CALLAHAN CO.
SAN FRANCISCO CHICAGO

"MAGIC"

THE PIONEER BOILER TREATMENT

What It Is —

MAGIC Boiler Preservative is an evolution from the standard method of using boiler compounds, chemicals and mechanical devices to remove scale from boilers.

It is a thick, heavy viscous liquid, weighing twelve pounds to the gallon, containing neither caustic soda, soda ash, tannic acid nor any other acid.

"MAGIC" acts on the iron, not on the water, and is a boiler treatment, not a water treatment. It is in a class by itself, and our greatest claim for "MAGIC" is that we positively guarantee it to prevent scale formation without injury to boiler or any connecting parts or the product of the plant.

"MAGIC" unlike the ordinary water treatment or compound, loosens the scale right down to the iron, coating the metal with a protective film or white-wash coating, which not only prevents new scale from forming, but stops pitting and corrosion and keeps boiler tight.

"MAGIC" is a good insurance, for it not alone reduces the cost of operating your plant, but greatly increases the life of the

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boiler and eliminates any danger of burned sheets and ruptures, often caused by heavy scale formation.

“MAGIC” is not a solvent. It does not dissolve nor eat up the scale, but brings it down in its original form. Scale coming down in solid form, always allows a free circulation of water around it and it is easy to remove, and there is never any danger of burning or bagging plates in boilers we treat.

“MAGIC” will not injuriously affect any kind of packing, whether asbestos, rubber, cotton or metallic. We can show samples of these materials which have been in “MAGIC” for over a year without any deterioration whatever.

“MAGIC” Boiler Preservative will not evaporate from the boiler or carry over with the steam, and can be used with safety in any plant without injury to the product.

In packing houses, breweries, ice plants, hospitals, hotels or creameries, where steam comes in actual contact with the product of the plant, it is essential that the former be pure and untainted by any chemicals used in the boiler, and for this reason compounds are rarely used by these operators.

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From Those Who Know

*The First Scientific Station for the Art of Brewing
in the United States of America*

**OFFICE AND LABORATORY,
No 200 Worth Street**

New York, November 21, 1908.

**MESSRS. JOHN CALLAHAN & CO.,
Chicago, Ill.**

Gentlemen: We have carefully analyzed and tested the sample of your Magic Boiler preservative handed to us for examination, and on the strength of our various tests can state the following:

The compound does not contain any ingredient which might harm the boiler, nor any volatile substance which will pass over with the steam and render the same unfit for use in such breweries as employ live steam in the mash tub or cooker, or use condensed steam in the manufacture of ice.

The compound acts upon the scale forming ingredients of water and precipitates them in such a form that they can easily be removed through the blow-off valve.

If used in a somewhat concentrated state, say at the ratio of 1:4000, it will remove scale previously formed in the boiler.

Respectfully yours,

G. D. THEVENOT, *Assistant Manager.*

Another Report And More for the Asking

**ZYMOTECNIC INSTITUTE
SCHOOL OF BREWING**

Chicago, June 13, 1905.

**MESSRS. JOHN CALLAHAN & CO.,
Seattle, Wash.**

Gentlemen: In compliance with your request we have made an examination of the sample of BOILER PRESERVATIVE sent us recently, and find that said compound contains nothing injurious to iron and can be used with safety in any boilers connected with breweries, ice plants, etc., and without injury in any way to such articles as they manufacture.

Respectfully submitted,

**ZYMOTECNIC INSTITUTE
J. E. SIEBEL, Ph.D., *Director.***

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What It Does —

"MAGIC" works its way to the iron through the cracks in the scale and the loose places formed by the unequal expansion and contraction of iron and scale, loosens the formation and brings it down freely, together with any oil, grease, or other foreign matter.

The action of "MAGIC" causes the old scale to loosen from the iron and drop off, or remain in such a condition that it can be very easily removed when boiler is washed.

"MAGIC" coats the metal with a protective film or white-wash coating to which the scale-forming substances cannot adhere.

This protective film or coating interferes in no way with the heat units, and is an absolute conductor of heat. It prevents pitting, corrosion and galvanic action, and eliminates the use of zinc plates, used to overcome this trouble, particularly in marine boilers. As this coating is worn off by the constant erosion of the solids held in suspension in the water, it must be renewed regularly, consequently "MAGIC" must be fed daily.

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Oil and Grease

“MAGIC” removes oil and grease by loosening that which is already in the boiler and holding it in suspension, and also prevents any that may enter with the feed water from adhering to the iron, consequently boilers treated with “MAGIC” will never give any trouble from this source.

Leaks

“MAGIC” stops leaks by working into the leak, and in coming in contact with the dry or outside air, hardens and forms a cement. Experiments have shown that leaks stopped by “MAGIC” will remain tight for a week to 12 days, without additional feeding.

Water Analysis Unnecessary

“MAGIC” works regardless of conditions under which boilers are working, their location, or the amount of water used, and it is not necessary to analyze the water, as is the case with all boiler compounds or water treatments in order to make up something to do the work.

Pitting

“MAGIC” prevents pitting by coating the metal and this protective film or coating protects it against any acids or chemicals in the water, which may cause this action to take place.

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A good example of “MAGIC’S” efficiency as a boiler preserver is a large traction company whose two new 500 h. p. boilers stood idle for three months, and on examination it was found in this short time they were badly corroded and pitted.

The superintendent heard of “MAGIC” and ordered one-half barrel, put twelve gallons in each boiler, boiled them for three days, and shut them down for a period of six months. After this the boilers were opened, inspected and found in first class condition, without any further signs of corrosion, and with a nice coating of “MAGIC” on the metal. If desired this superintendent’s name will be furnished.

In addition to the above we have many references and testimonials from concerns who have used “MAGIC” for the past two to fifteen years, and will be glad to furnish them on request.

"MAGIC" BOIL

"THE PIONEER"



EL PRESERVATIVE

BOLER TREATMENT™



“MAGIC”

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How to Use It—

TO use “MAGIC” you require no elaborate or expensive feeding device. It mixes readily with hot or warm water and you follow our instructions which we issue in each and every case. These instructions are simple and easily followed and you cannot go wrong. No lengthy letters or reports necessary. Just do as we advise and “MAGIC” will do the rest.

“MAGIC” must not be fed to boilers gradually, as the quicker it gets into the boiler, the better the results obtained. It is not necessary to shake the barrel or stir the contents, as the last quart is exactly the same as the first, whether it is 100 above or 30 below zero.

Directions

One pint for every 50 boiler h. p. every 12 hours until boilers are clean, then reduce to just enough to keep the metal thoroughly coated and prevent further formation. In stubborn cases feed double the amount until scale starts freely.

Marine Condensing Work

Use one-half of the above amount and feed from hot well or through feed pump suction.

Railroad Locomotive Work

Road engines, from one to four quarts for each boiler for run of about 150 miles. Switch engines same amount every 12 hours. Always feed at each terminal and through injector, and not from water tank.

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Scale Costs Money

STATISTICS from the U. S. Government experts on the cost of generating h. p. in steam boilers show that to produce 100 h. p. for 3,000 working hours, price of coal \$1.50 per ton costs:

With clean flues and boiler	\$1,269.00
With scale $\frac{1}{8}$ inch thick	1,459.00
With scale $\frac{1}{4}$ inch thick	1,649.00
With scale $\frac{3}{8}$ inch thick	2,030.00
With scale $\frac{1}{2}$ inch thick	3,173.00

An ordinary 150 h. p. tubular boiler working 10 hours a day, 300 days per year, will evaporate on an average of 15 lbs. of water per h. p. per hour, or 840,320 gallons a year) and if each gallon contains 30 grains of solids (about the average) the quantity precipitated will be 3,473 lbs.

For the sake of argument, we will grant that mechanical devices will remove scale, but that is the extent of their usefulness and are but a temporary relief, for just as long as you are allowing scale to accumulate, just so long are you consuming more coal to produce enough additional heat energy to penetrate this formation.

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Water treatments are not practical because the water must be analyzed frequently as it is a well known fact that the scale-forming sediment in the water changes with the seasons, climates and localities. Not only this, but to separate all solids, the water must be brought to a temperature of 300 degrees which only takes place in the boiler while it is working. “MAGIC” works inside the boiler after this separation takes place.

Don't these facts convince you it is advisable to use “MAGIC” to keep boilers clean and preserve them, rather than to put in strong acids and caustics which common sense tells you must have an injurious effect upon the boiler, valves, packing and lubricating system?

Try this practical experiment:

Place a small bright steel or iron turning, one that shows no sign of rust or corrosion, in a small bottle containing ordinary water from any locality, with “MAGIC” at the ratio of 1-1000 in the water and the steel or iron will always remain bright, while if a piece of the same turning is put in the same water, without “MAGIC” corrosion will quickly take place.

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To the Railroads

WE maintain a separate department for this trade, employing a corps of experts who have been especially chosen for their practical experience and knowledge of locomotive boiler efficiency. We stand ready and willing at all times to offer assistance to those having boiler troubles, showing how they can increase flue mileage, fire box life and decrease boiler failures and repairs.

The cost of "MAGIC" ranges from $1\frac{1}{4}c$ to $2\frac{3}{4}c$ per thousand gallons of water evaporated, with impurities averaging 40 grains to the gallon.

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MAGIC” is not an experiment, as it passed that stage sixteen years ago. It is not an imitation or a duplication of any article on the market used for treating boilers. It is the *original boiler treatment* and, like all successful articles, has many imitators who do not hesitate to tell you that their product is just as good as “MAGIC,” thereby acknowledging that “MAGIC” is the highest standard of achievement in boiler treatments.

Sixteen years' experience has proven conclusively that “MAGIC” will always do the work without any injurious effects to the boiler or connecting parts. It will greatly prolong the life of any boiler anywhere; keep your boiler clean and it will pay for itself many times over in coal saving alone.

“MAGIC” was introduced to steam users in this country in 1903 by our original and liberal offer to any plant or steam user and as it has never failed to make good, we still adhere to that offer to furnish enough for a thorough test in any plant and if it does not prove entirely satisfactory, when properly used, your money will be cheerfully refunded.

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Economy

MAGIC” is a very economical material to use as we have many stationary operators, who after having cleaned their boilers, are now keeping them clean with one-half pint per day for each 50 h. p.

Marine operators are accomplishing the same results with one quart per day per 300 h. p.

Railroads using “MAGIC” are keeping their power clean and tight and greatly increasing the life of flues, meaning greater mileage and less coal consumption.

Put Up In

600 lb. barrels
350 lb. half-barrels
150 lb. quarter-barrels



Manufactured only by

GARRATT-CALLAHAN COMPANY

Patentees

SAN FRANCISCO

CHICAGO

Guarantee

WE absolutely guarantee "MAGIC" Boiler Preservative when used according to directions:

Will remove scale already formed and stop further formation of scale in boilers, in any locality.

Will remove oil and grease.

Will stop pitting and corrosion.

Will stop minor leaks.

Will increase the life and efficiency of boilers and give from 50 to 200 per cent more service from each set of tubes.

We also guarantee "MAGIC" when used according to directions:

Will not injure the metal in your boilers or connecting parts.

Will not evaporate from the boilers nor pass over with the steam.

Will not affect the packing, lubricants or product of your plant, which may come in contact with the steam.

Will not cause boilers to foam.

**GARRATT-CALLAHAN
COMPANY**



